EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Example 1 (page 236)

GO for Help

Find the LCM of each pair by listing multiples.

1. 10, 45
2. 6, 9
3. 12, 20
4. 5, 9
5. 10, 36
6. 7, 12
7. 5, 6
8. 5, 6, 7

9. **Schedules** Both the football and volleyball teams have games today. The football team plays every 7 days. The volleyball team plays every 3 days. When will both teams have games on the same day again?

Examples 2 and 3 (page 236 and 237)

Find the LCM.

10. 20, 36
11. 15, 27
12. 8, 14, 20
13. 5, 12, 15
14. $12x, 40y$
15. $8x, 25y$
16. $2b^2, 6c^3$
17. $6a^3, 8a$

Example 4 (page 237)

Graph and compare the fractions in each pair.

18. $\frac{4}{5}, \frac{2}{5}$
19. $-\frac{2}{3}, -\frac{1}{3}$
20. $\frac{5}{8}, -\frac{5}{8}$
21. $\frac{11}{12}, \frac{7}{12}$

Example 5 (page 238)

Compare the fractions in each pair.

22. $\frac{5}{6} \blacksquare \frac{3}{4}$
23. $\frac{6}{8} \blacksquare \frac{7}{9}$
24. $\frac{1}{6} \blacksquare \frac{1}{8}$
25. $-\frac{5}{18} \blacksquare -\frac{1}{3}$

26. **Track and Field** At the track meet, Maria placed first in $\frac{4}{5}$ of her events and Carla placed first in $\frac{2}{3}$ of her events. Who placed first in the greater fraction of events?

Example 6 (page 238)

Order from least to greatest.

27. $\frac{7}{9}, \frac{3}{9}, \frac{5}{9}$
28. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$
29. $\frac{2}{5}, \frac{2}{3}, \frac{2}{7}, 2$
30. $\frac{2}{5}, -\frac{3}{8}, -\frac{1}{3}, \frac{2}{4}$

B Apply Your Skills

Mental Math Compare. Use >, <, or = to complete each statement.

31. $-\frac{3}{19} \blacksquare \frac{1}{200}$
32. $\frac{-1}{-3} \blacksquare \frac{1}{3}$
33. $\frac{9}{11} \blacksquare \frac{7}{11}$
34. $\frac{-2}{-7} \blacksquare \frac{4}{14}$
35. $\frac{8}{8} \blacksquare \frac{3}{3}$
36. $\frac{2}{10} \blacksquare \frac{2}{100}$
37. $\frac{2}{5} \blacksquare 3\frac{2}{5}$
38. $\frac{-4}{-17} \blacksquare -\frac{5}{2}$

39. **Multiple Choice** You need $\frac{5}{8}$ yd of fabric for a craft project. You find a piece marked $\frac{2}{3}$ yd. Is the piece long enough? Explain.

Ⓐ No; $\frac{2}{3} > \frac{5}{8}$ Ⓑ No; $\frac{2}{3} < \frac{5}{8}$

Ⓒ Yes; $\frac{2}{3} > \frac{5}{8}$ Ⓓ Yes; $\frac{2}{3} < \frac{5}{8}$

40. The manager of Frank's Snack Shop buys hot dogs in packages of 36. He buys hot dog buns in packages of 20. He cannot buy part of a package. What is the least number of packages of each product he can buy to have an equal number of hot dogs and buns?

Find the LCM.

41. 45, 120, 150
42. 2, 5, 12, 15
43. $12x, 40$
44. $7ab, 8a^3b^2, 10a^4$
45. $8x, 18xy$
46. $9b^3, 12bc^2$
47. $4g^2, 10j^4$
48. $2x^3, 5y^2, 15xy^2$

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Compare. Use >, <, or = to complete each statement.

49. $\frac{7}{14} \blacksquare \frac{3}{6}$ **50.** $-\frac{7}{9} \blacksquare -\frac{2}{3}$ **51.** $\frac{8}{5} \blacksquare \frac{3}{2}$ **52.** $-\frac{19}{24} \blacksquare -\frac{5}{6}$

53. $-\frac{3}{8} \blacksquare -\frac{6}{16}$ **54.** $\frac{10}{11} \blacksquare \frac{4}{5}$ **55.** $\frac{1}{2} \blacksquare \frac{2}{4}$ **56.** $-3 \blacksquare -\frac{12}{36}$

57. Writing in Math Jeremy and Fran want to compare $\frac{5}{8}$ to $\frac{9}{12}$. Jeremy writes equivalent fractions with a denominator of 96. Fran writes equivalent fractions with a denominator of 24. Which method would you prefer? Explain.

Challenge

58. Geometry You have tiles that measure 4 in. by 5 in. What is the smallest square region you can cover without cutting or overlapping the tiles? Explain.

59. Servings Suppose you and your brother shared two 12-in. pizzas, a mushroom pizza cut into 8 slices and a cheese pizza cut into 6 slices. If you ate 5 slices of the mushroom pizza, and your brother ate 3 slices of the cheese pizza, who ate more pizza?

Test Prep

Multiple Choice

60. What is the LCM of 2, 3, 4, and 5?
A. 30 **B.** 60 **C.** 90 **D.** 120

61. What is the GCF of $6a^3b$ and $4a^2b$?
F. a^2b **G.** a^5b^2 **H.** $2a^2b$ **J.** $4a^5b^2$

62. Salt shakers come in boxes of 30 and pepper shakers come in boxes of 24. How many whole boxes of each must you buy to get an equal number of salt and pepper shakers?
A. 4 salt, 5 pepper **B.** 5 salt, 4 pepper
C. 24 salt, 30 pepper **D.** 30 salt, 24 pepper

Short Response

63. Are the numbers in order from least to greatest: $\frac{5}{8}, \frac{7}{16}, \frac{11}{20}$? Explain.

Mixed Review

GO for Help

Lesson 4-9 **Write in scientific notation.**

64. 5,000,000 **65.** 0.001394 **66.** 8,900,000 **67.** 0.000005

Lesson 4-3 **Find each GCF.**

68. 24, 42 **69.** 16, 52 **70.** $25c, 55c^2$ **71.** $90xy, 45x^2$

Lesson 2-5 **72. History** The first modern Olympics took place in 1896 in Athens, Greece. One hundred years later, 197 nations took part in the Olympics in Atlanta, Georgia. This was 184 more nations than at the first Olympics. Solve the equation $x + 184 = 197$ to find the number of nations at the first Olympics.

EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Example 1 (page 241)

Write each fraction or mixed number as a decimal.

1. $\frac{7}{25}$ **2.** $\frac{3}{5}$ **3.** $1\frac{9}{20}$ **4.** $6\frac{1}{4}$

GO for Help

5. Remodeling Randy and Becky measure a carpet. Becky says the carpet's length is $10\frac{5}{16}$ ft. Randy writes "10.3125 ft." Did Randy write the correct measurement? Explain.

Example 2 (page 242)

Write each fraction as a decimal. State whether the decimal is *terminating* or *repeating*. If the decimal repeats, state the block of digits that repeats.

6. $-\frac{5}{8}$ **7.** $-\frac{1}{6}$ **8.** $\frac{2}{9}$ **9.** $\frac{9}{11}$

Example 3 (page 242)

Order from least to greatest.

10. $1.2, \frac{3}{5}, -0.5, \frac{9}{10}$

11. $\frac{1}{2}, \frac{3}{2}, \frac{5}{2}, 0.3$

12. $-\frac{1}{4}, -\frac{1}{8}, -0.75, -0.625$

13. $\frac{3}{2}, \frac{2}{5}, \frac{6}{5}, 0.06$

14. $-\frac{7}{10}, -\frac{8}{10}, -0.77, -0.87$

15. $2.1, \frac{22}{10}, 2.01, \frac{22}{11}$

Examples 4 and 5 (page 243)

Write each decimal as a fraction or a mixed number in simplest form.

16. 2.25 **17.** 3.4 **18.** 0.08 **19.** 7.15

20. 2.48 **21.** 6.37 **22.** 5.36 **23.** 2.55

24. $0.\overline{5}$ **25.** $0.\overline{126}$ **26.** $0.\overline{27}$ **27.** $-0.\overline{3}$

B Apply Your Skills

Mental Math Compare. Use >, <, or = to complete each statement.

28. $\frac{1}{2}$ ■ 1.2 **29.** $\frac{7}{8}$ ■ 0.875 **30.** $\frac{3}{5}$ ■ 0.25 **31.** $\frac{1}{8}$ ■ 0.375

32. Number Sense A carpenter has a bolt with diameter $\frac{5}{32}$ in. Will the bolt fit in a hole made by a drill bit with diameter 0.2 in.? Explain.

Write each fraction or mixed number as a decimal.

33. $5\frac{3}{8}$ **34.** $2\frac{5}{16}$ **35.** $\frac{1}{25}$ **36.** $3\frac{4}{5}$ **37.** $-\frac{31}{100}$ **38.** $\frac{7}{11}$

Write as a fraction or a mixed number in simplest form.

39. 0.35 **40.** 6.8 **41.** −3.9 **42.** $10.\overline{105}$

43. Batting averages are usually expressed as decimals. Sarah got 32 hits in 112 times at bat. Lizzie got 26 hits in 86 times at bat.

a. Data Analysis Find their batting averages to the nearest thousandth.

b. Probability Based on their batting averages, who is more likely to get a hit? Explain.

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44. Number Sense Copy and complete this table of some commonly used fractions and decimals. Write the fractions in simplest form.

Fraction	■	■	$\frac{3}{8}$	$\frac{1}{2}$	■	$\frac{3}{4}$	$\frac{7}{8}$
Decimal	0.125	0.25	■	■	0.625	■	■

C Challenge **Write as a fraction or a mixed number in simplest form.**

45. $0.0\overline{6}$ **46.** $0.1\overline{83}$ **47.** 0.272727 **48.** $1.1\overline{9}$

49. Writing in Math Is 3.010010001... a repeating decimal? Explain.

50. Number Sense The number of digits that repeat in a repeating decimal is called the *period* of the decimal. The period of $0.\overline{3}$ is 1.
a. Write $\frac{5}{7}$, $\frac{4}{13}$, and $\frac{7}{15}$ as decimals.
b. What is the period of each decimal you wrote in part (a)?

51. Reasoning Seth had just finished a division problem on his calculator when the telephone rang. He got distracted. When he looked back at the calculator, all he could see was the display 0.04040404. What might have been the division problem? Explain.

Test Prep

Multiple Choice

52. Which decimal is the closest approximation to $\frac{2}{3}$?
A. 0.230 **B.** 0.233 **C.** 0.600 **D.** 0.667

53. A clerk puts slices of cheese on a scale until it reads 1.625 lb. What is this amount as a mixed number?
F. $1\frac{1}{6}$ lb **G.** $1\frac{1}{4}$ lb **H.** $1\frac{5}{8}$ lb **J.** $1\frac{6}{25}$ lb

Short Response

54. Lucia's math teacher asks her to write $\frac{3}{11}$ as a decimal. She enters 3 ÷ 11 on her calculator. The calculator displays 0.2727273. **(a)** Is this the answer Lucia should record? **(b)** Explain your response.

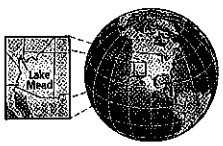
Mixed Review

Lesson 5-1 **Order the fractions in each group from least to greatest.**

55. $-\frac{1}{3}, \frac{2}{3}, -\frac{5}{6}, \frac{1}{6}$ **56.** $\frac{5}{8}, \frac{3}{8}, \frac{1}{5}, \frac{3}{5}, \frac{1}{8}$ **57.** $-\frac{4}{7}, -\frac{1}{14}, -\frac{3}{14}, -\frac{6}{7}$

Go for Help

Lesson 4-9 **58. Geography** Lake Mead, located between Arizona and Nevada, has a capacity of 34,850,000,000 m^3. Write this number in scientific notation.



Lessons 3-5 and 3-6 **Solve each equation.**

59. $12.9 + x = 27.3$ **60.** $9.4m = -32.9$

EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Example 1 (page 247)

GO for Help

Find each sum or difference. Simplify if possible.

1. $\frac{3}{16} + \frac{7}{16}$
2. $\frac{6}{z} + \left(-\frac{2}{z}\right)$
3. $\frac{15}{q} - \frac{8}{q}$
4. $\frac{5}{11} + \frac{4}{11}$
5. $\frac{11}{12} - \frac{7}{12}$
6. $\frac{7}{8} + \frac{5}{8}$
7. $\frac{3}{10} - \frac{7}{10}$
8. $\frac{2}{x} + \frac{3}{x}$

Example 2 (page 248)

Simplify each sum or difference.

9. $\frac{3}{4} - \frac{2}{3}$
10. $\frac{12}{20} - \frac{1}{4}$
11. $-\frac{3}{10} - \frac{5}{100}$
12. $\frac{6}{x} - \frac{2}{5}$

Example 3 (page 248)

Find each sum or difference. Simplify if possible.

13. $3\frac{3}{4} + 2\frac{1}{4}$
14. $\frac{4}{16} + 1\frac{3}{8}$
15. $10\frac{1}{8} + 3\frac{3}{4}$
16. $3\frac{5}{8} + 2\frac{7}{12}$
17. $1\frac{5}{9} - 1\frac{2}{9}$
18. $5\frac{3}{4} - 2\frac{1}{8}$
19. $1\frac{17}{18} - \frac{7}{9}$
20. $1\frac{7}{8} - 2\frac{3}{4}$

21. **Homework** Kim works on Social Studies homework for $2\frac{2}{5}$ h. Then she works on Math homework for $1\frac{1}{4}$ h. How many hours total does Kim spend doing homework?

B Apply Your Skills

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Estimation Estimate each sum or difference.

22. $2\frac{1}{3} + 7\frac{1}{8}$
23. $25\frac{5}{18} - 9\frac{11}{17}$
24. $15\frac{3}{4} + 31\frac{1}{2}$
25. $-4\frac{7}{8} + 15\frac{1}{10}$

26. **Writing in Math** Describe why estimating a sum or difference before adding or subtracting is useful.

27. **Crafts** A doll artist cuts a piece of lace $8\frac{5}{8}$ in. long from a piece $10\frac{1}{2}$ in. long. How many inches of lace are left?

Find each sum or difference.

28. $\frac{12}{15} + \frac{1}{2}$
29. $\frac{3}{n} - \frac{3}{10}$
30. $\frac{7}{10} + \frac{2d}{3}$
31. $\frac{5}{6} + \frac{7}{9}$

Mental Math Find each sum.

32. $\frac{3}{4} + \frac{3}{8} + \frac{1}{4}$
33. $2\frac{5}{7} + 1\frac{2}{5} + 3\frac{2}{7}$
34. $\frac{2}{7} + \frac{x}{2} + \left(-\frac{2}{7}\right)$

35. **Weather** There were three snowstorms last winter. The storms dropped $3\frac{1}{2}$ in., $6\frac{1}{2}$ in., and $10\frac{3}{4}$ in. of snow. What was the combined snowfall of the three storms?

C Challenge

Use prime factors to find the LCD. Then simplify each expression.

36. $\frac{7}{24} - \frac{15}{90}$
37. $\frac{-5}{66} + \frac{-7}{99}$
38. $\frac{2}{28} + \frac{1}{49}$

39. **Collections** Dora and Paul have a collection of x marbles. Dora has $\frac{x}{3}$ marbles. What fraction of the marbles does Paul have?

Test Prep

Multiple Choice

40. Which sum or difference is greater than 0?

A. $-\frac{7}{8} + \frac{3}{4}$ **B.** $-\frac{7}{8} - \frac{3}{4}$ **C.** $-\frac{7}{8} + \left(-\frac{3}{4}\right)$ **D.** $\frac{7}{8} + \left(-\frac{3}{4}\right)$

41. Sue is fishing. She catches a bass weighing $5\frac{1}{4}$ lb. Then she catches three more weighing $3\frac{1}{2}$ lb, $1\frac{3}{4}$ lb, and 2 lb. She releases the smallest fish. What is the total weight of the fish Sue keeps?

F. $8\frac{3}{4}$ lb **G.** $9\frac{1}{4}$ lb **H.** $10\frac{3}{4}$ lb **J.** $12\frac{1}{2}$ lb

42. Which expression is equal to $\frac{1}{3} + \frac{1}{6}$?

A. $\frac{1}{2} + \frac{2}{4}$ **B.** $\frac{1}{4} + \frac{2}{8}$ **C.** $\frac{1}{5} + \frac{2}{10}$ **D.** $\frac{1}{7} + \frac{2}{14}$

Short Response

43. In 2003, first-class postage in the United States costs 37¢ for 1 oz. Your letter weighs $\frac{3}{4}$ oz. **(a)** Do you need extra postage to include a newspaper clipping that weighs $\frac{3}{8}$ oz? **(b)** Explain.

44. José and Letty plan to ride their bicycles at least eight miles. They ride for $5\frac{3}{8}$ miles and stop for a break. Then they ride for another $2\frac{5}{7}$ miles. **(a)** Do they meet their goal? **(b)** Explain your answer.

Mixed Review

GO for Help

Lesson 5-2 **Order from least to greatest.**

45. $\frac{5}{8}, \frac{4}{7}, \frac{3}{6}$ **46.** $\frac{2}{3}, 0.6, 0.66$ **47.** $\frac{10}{9}, \frac{9}{10}, -\frac{9}{10}, -\frac{10}{9}$

Lesson 4-7 **Simplify each expression.**

48. $x \cdot x^2$ **49.** $(x^3)^4$

Lesson 3-3

50. Data Analysis Use the data at the right. Find the mean, median, and mode of the annual salaries. Which statistic would you use to encourage someone to take a job at Company A?

10 Salaries at Company A	
$26,000	$62,000
$30,000	$22,000
$22,000	$26,000
$50,000	$21,000
$22,000	$65,000

Checkpoint Quiz 1 — Lessons 5-1 through 5-3

Compare. Use >, <, or = to complete each statement.

1. $\frac{2}{3} \blacksquare \frac{2}{5}$ **2.** $2\frac{2}{3} \blacksquare 2\frac{4}{6}$ **3.** $-\frac{1}{5} \blacksquare -\frac{1}{8}$ **4.** $-1.65 \blacksquare -1\frac{5}{8}$

Write each fraction or mixed number as a decimal and each decimal as a fraction in simplest form.

5. $\frac{51}{100}$ **6.** 0.012 **7.** $1\frac{1}{4}$ **8.** $0.\overline{3}$ **9.** $\frac{5}{6}$ **10.** $0.\overline{51}$

Find each sum or difference. Simplify if possible.

11. $\frac{6}{13} + \frac{5}{13}$ **12.** $\frac{11}{12} - \frac{7}{9}$ **13.** $1\frac{3}{5} + 2\frac{7}{8}$ **14.** $4\frac{1}{7} - 3\frac{10}{21}$

RCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

ice and Problem Solving

ractice by Example

Examples 1 and 2 (pages 252 and 253)

for Help

Example 3 (page 253)

Find each product. Simplify if possible.

1. $\frac{2}{3} \cdot \frac{1}{5}$
2. $-\frac{1}{2}\left(\frac{3}{8}\right)$
3. $-\frac{4}{7} \cdot -\frac{3}{5}$
4. $\left(-\frac{2}{3}\right)\left(\frac{11}{13}\right)$
5. $\left(-\frac{7}{8}\right)\left(-\frac{4}{5}\right)$
6. $\frac{12y}{25} \cdot \frac{5}{6}$
7. $\frac{9}{10} \cdot \frac{15x}{3}$
8. $\frac{5}{9}\left(\frac{9}{10}\right)$
9. $5\frac{7}{8} \cdot \frac{6}{7}$
10. $2\frac{3}{4} \cdot 1\frac{1}{5}$
11. $-1\frac{2}{5} \cdot 2\frac{2}{7}$
12. $-3\frac{2}{5} \cdot -1\frac{2}{3}$

13. **Homework** Jim spends $\frac{3}{4}$ of an hour on homework. His older sister Gina spends $1\frac{2}{3}$ times as much on her homework as Jim spends on his. How much time does Gina spend doing her homework?

Example 4 (page 254)

Find each quotient. Simplify if possible.

14. $\frac{1}{2} \div \frac{1}{3}$
15. $\frac{5}{8} \div \frac{3}{4}$
16. $-\frac{3}{4} \div \frac{1}{3}$
17. $\frac{11}{12} \div \left(-\frac{7}{8}\right)$
18. $\frac{3}{4} \div \frac{8}{9}$
19. $\frac{3}{4} \div \frac{1}{2}$
20. $\frac{2t}{5} \div \frac{2}{5}$
21. $\frac{1}{x} \div \frac{3}{x}$

Example 5 (page 254)

22. $12\frac{2}{3} \div \frac{3}{4}$
23. $1\frac{3}{8} \div 2\frac{1}{16}$
24. $-1\frac{7}{9} \div \frac{8}{9}$
25. $-3\frac{2}{3} \div \left(-2\frac{4}{9}\right)$
26. $3\frac{1}{2} \div \frac{4}{21}$
27. $7\frac{2}{3} \div 1\frac{5}{6}$
28. $6\frac{3}{4} \div \frac{9}{10}$
29. $1\frac{4}{5} \div \left(-1\frac{1}{2}\right)$

B Apply Your Skills

Find each product. Simplify if possible.

30. $\frac{6x}{7} \cdot \frac{1}{3}$
31. $-\frac{2}{3} \cdot \frac{9}{10}$
32. $\frac{8}{9} \cdot \frac{15}{28}$
33. $-1\frac{1}{4} \cdot 6\frac{2}{3}$
34. $\frac{4}{t} \cdot \frac{3t}{8}$
35. $\frac{4a}{9} \cdot \frac{3}{10}$
36. $1\frac{3}{5} \cdot \left(-2\frac{1}{2}\right)$
37. $\left(-\frac{7}{12}\right)\left(-\frac{5}{6}\right)$

38. **Number Sense** One granola bar weighs $1\frac{1}{2}$ oz. What is the weight of six granola bars?

Find each quotient. Simplify if possible.

39. $-\frac{1}{2} \div \frac{2}{3}$
40. $\frac{10}{13} \div \frac{15}{26}$
41. $-\frac{5}{6} \div \frac{4}{9}$
42. $\frac{4}{9x} \div \frac{2}{3x}$
43. $\frac{2}{5} \div \frac{15}{16}$
44. $-\frac{6n}{7} \div \frac{n}{3}$
45. $\frac{2}{9} \div \frac{w}{3}$
46. $\frac{3}{8} \div \frac{6}{32}$

Mental Math Simplify each expression.

47. $\frac{1}{2} \cdot \frac{2}{5}$
48. $\frac{1}{2} \div \frac{2}{5}$
49. $10 \cdot \frac{1}{4}$
50. $10 \div \frac{1}{4}$
51. $\frac{5}{8} \cdot \frac{3}{5}$
52. $\frac{5}{8} \div \frac{3}{5}$
53. $\frac{3}{7} \cdot \frac{12}{21}$
54. $\frac{3}{7} \div \frac{12}{21}$

55. **Construction** A cable television crew has to install cable along a road $1\frac{1}{2}$ mi long. The crew takes a day to install each $\frac{1}{4}$ mi of cable. How many days will the installation take?

(A) 6 days (B) $1\frac{3}{4}$ days (C) $\frac{3}{4}$ day (D) $\frac{3}{8}$ day

56. a. Write an expression for the following: The product of $\frac{1}{2}a$ and 3 is decreased by the quotient $a \div (-4)$.
b. Evaluate your expression for $a = 3$.

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57. A cheetah can run as fast as 64 mi/h. At that speed, how far could a cheetah run in $\frac{1}{16}$ h? $\frac{1}{30}$ h?

58. You are hiking along a trail that is $13\frac{1}{2}$ mi long. You plan to rest every $2\frac{1}{4}$ mi. How many rest stops will you make?

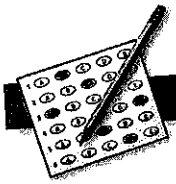
Challenge

59. **Writing in Math** Why must you change mixed numbers to improper fractions before multiplying or dividing them?

60. a. **Patterns** Find each quotient: $\frac{1}{2} \div 2, \frac{1}{2} \div 3, \frac{1}{2} \div 4$, and $\frac{1}{2} \div 5$.
    b. Explain what happens to the quotients as the divisor increases in value.

61. **Reasoning** Write a multiplication equation and a division equation that you could use to show the result of cutting four melons into eight equal slices each.

62. **Open-Ended** Find two fractions greater than $\frac{1}{2}$ with a product less than $\frac{1}{2}$.



Test Prep

Multiple Choice

63. Which quotient does NOT equal 1?
    A. $2\frac{3}{4} \div \frac{11}{4}$ B. $\frac{3}{8} \div 0.375$ C. $\frac{7}{8} \div \frac{7}{8}$ D. $-1\frac{2}{3} \div \left(-\frac{3}{5}\right)$

64. Which expression simplifies to $\frac{x}{3}$?
    F. $\frac{5x}{36}\left(\frac{5}{12}\right)$ G. $\frac{x}{6}\left(2\frac{2}{5}\right)$ H. $\frac{5x}{36}\left(2\frac{2}{5}\right)$ J. $\frac{36}{5x}\left(2\frac{2}{5}\right)$

Short Response

65. a. A family wants to travel 300 miles. They drive at an average speed of 65 mi/h for $3\frac{1}{2}$ hours. Have they driven far enough?
    b. Explain your answer for part (a).

66. Natasha's bedroom floor is $10\frac{1}{2}$ ft by $14\frac{3}{4}$ ft. She buys 160 ft^2 of carpet. Does she have enough carpet to cover the floor? Explain.

Mixed Review

GO for Help

Lesson 5-3 **Add or subtract.**

67. $\frac{4}{5} + \frac{6}{7}$ 68. $\frac{10}{13} - \frac{25}{26}$ 69. $-\frac{3}{10} + \frac{3}{5}$ 70. $\frac{16}{21} - \frac{5}{7}$

Lesson 4-4 **Simplify each fraction.**

71. $\frac{10}{12}$ 72. $\frac{24}{40}$ 73. $\frac{45}{10}$ 74. $\frac{12}{50}$ 75. $\frac{34}{51}$ 76. $\frac{105}{135}$

Lesson 2-7

77. Hal's age is three times Ida's age. In 8 years Hal will be twice as old as Ida. How old is Hal?

78. **Personal Finance** You spent $\frac{1}{4}$ of your money on lunch. After lunch, you gave half of what you had left to a friend, and then spent \$3 on a book. You have \$4.50 left. How much money did you have before lunch?

EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice*

Practice and Problem Solving

A Practice by Example

Example 1 (page 268)

GO for Help

Solve and check each equation.

1. $b + \frac{4}{5} = \frac{9}{10}$
2. $g + \frac{9}{10} = \frac{7}{10}$
3. $m + \frac{3}{4} = \frac{1}{4}$
4. $a + \frac{3}{5} = \frac{4}{5}$
5. $\frac{5}{16} = c + \frac{3}{16}$
6. $t + \frac{1}{4} = \frac{5}{9}$

7. **Reading** Jarrel's goal is to be half finished with the book he is reading by Friday. By Wednesday he has read $\frac{1}{3}$ of the book. How much more does he need to read to meet his goal?

Example 2 (page 269)

Solve and check each equation.

8. $a - \frac{1}{8} = \frac{5}{8}$
9. $t - \frac{2}{3} = \frac{4}{9}$
10. $c - \frac{9}{10} = \frac{1}{3}$
11. $\frac{1}{2} = n - \frac{5}{8}$
12. $a - \frac{5}{8} = \frac{7}{12}$
13. $3 = j - \frac{5}{8}$

Example 3 (page 269)

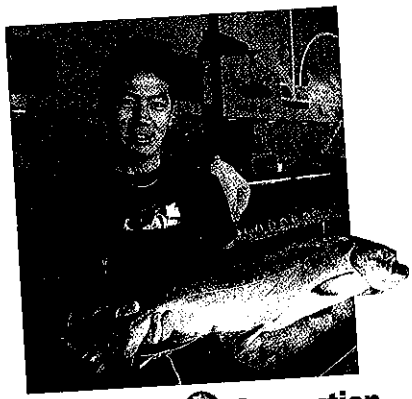
14. $x + 1\frac{1}{4} = 4\frac{3}{4}$
15. $5\frac{1}{4} = w + 2\frac{1}{2}$
16. $10\frac{1}{2} = x + 1\frac{1}{2}$
17. $z + 7\frac{5}{9} = 7\frac{5}{9}$
18. $c - 2\frac{1}{12} = 3\frac{1}{12}$
19. $y + 4\frac{7}{8} = 2$

B Apply Your Skills

Number Sense **Without solving each equation, state whether x is *positive*, *negative*, or *zero*. Justify your response.**

20. $x + 2\frac{9}{11} = 2\frac{9}{11}$
21. $x + \frac{9}{10} = \frac{1}{2}$
22. $x + 4\frac{1}{5} = 5\frac{1}{2}$

23. **Growth** At the beginning of the school year, Jamie's height was $62\frac{1}{2}$ inches. During the school year she grew $1\frac{3}{4}$ inches, $\frac{1}{8}$ inch more than she grew the previous year.
   a. What was Jamie's height at the end of the school year?
   b. How tall was Jamie at the start of the previous school year?



Real-World Connection

The average weight of an Alaskan Coho salmon is about $7\frac{9}{10}$ lb.

Solve and check each equation.

24. $p - 3\frac{2}{3} = 1\frac{1}{3}$
25. $1\frac{3}{8} = b + 2\frac{1}{6}$
26. $y - 4\frac{7}{8} = \frac{3}{4}$
27. $k + 2\frac{1}{9} = 1\frac{1}{3}$
28. $f + 4\frac{5}{12} = 5\frac{3}{8}$
29. $g + 8\frac{4}{9} = 3\frac{1}{6}$
30. $h + 2\frac{1}{2} = 5\frac{7}{10}$
31. $6\frac{1}{4} = a + \frac{5}{8}$
32. $2\frac{1}{16} = d + 5\frac{7}{1}$

33. **Seafood** A restaurant chef needs $8\frac{1}{2}$ lb of salmon. To get a g price, he buys more than he needs. He ends up with $4\frac{7}{8}$ lb to How much salmon did he buy?

34. **Carpentry** A carpenter used $3\frac{3}{16}$ lb of nails for a job. After t was over, the remaining nails weighed $1\frac{1}{16}$ lb. How many po of nails did the carpenter have at the beginning of the job?

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Solve and check each equation.

35. $x + \frac{2}{3} - \frac{1}{3} = 3\frac{1}{3}$
36. $x - \frac{3}{4} + \frac{1}{6} = 1\frac{5}{12}$
37. $x - 2\frac{2}{5} + 3$

Challenge

38. **Writing in Math** Write a problem that you could solve with the equation $x + \frac{1}{2} = 7$. Solve your problem.

39. **Environment** During a recent wet spell, the water level in Jasper's Pond rose $2\frac{3}{4}$ in. The depth of the pond was then 10 ft 3 in. What was the depth of the water in the pond before the wet spell?

Test Prep

Multiple Choice

40. A tree is $10\frac{1}{2}$ ft tall. Which equation can you use to find the height of the tree before last spring's growth of 8 in.?

A. $t + \frac{8}{12} = 10\frac{1}{2}$ **B.** $t - \frac{8}{12} = 10\frac{1}{2}$

C. $t + 10\frac{1}{2} = \frac{8}{12}$ **D.** $t - 10\frac{1}{2} = \frac{8}{12}$

41. What is the value of d in the equation $d + \frac{3}{4} = 4\frac{5}{8}$?

F. $3\frac{1}{2}$ **G.** $3\frac{7}{8}$ **H.** $4\frac{1}{4}$ **J.** $5\frac{3}{8}$

42. What is the value of c in $1\frac{1}{4} - c = \frac{3}{8}$?

A. $-1\frac{5}{8}$ **B.** $-\frac{7}{8}$ **C.** $\frac{7}{8}$ **D.** $1\frac{5}{8}$

Extended Response

43. Below is a student's work for solving the equation $x - (-\frac{1}{2}) = 3$.

$$x - (-\tfrac{1}{2}) = 3$$
$$x - (-\tfrac{1}{2}) + \tfrac{1}{2} = 3 + \tfrac{1}{2}$$
$$x = 3\tfrac{1}{2}$$

a. What is the student's error?
b. What likely caused the error?
c. What is the correct value of x?
d. How did the error affect the value of x?

Mixed Review

GO for Help

Lesson 5-5 **Complete each statement.**

44. $2\frac{2}{3}$ ft = 32 ■ **45.** $1\frac{1}{2}$ ■ = 12 fl oz **46.** 9 pt = $4\frac{1}{2}$ ■

47. $\frac{1}{2}$ ■ = $\frac{1}{4}$ qt **48.** 750 lb = $\frac{3}{8}$ ■ **49.** $1\frac{2}{3}$ ■ = 5 ft

Lesson 5-4 **50.** **a.** **Jobs** Your job is to paint $\frac{1}{4}$ of the lockers in the school. Your friend agrees to share the job equally with you. What fraction of the lockers will each of you paint?

b. If the job of painting all of the lockers in the school pays \$1,100, how much will you earn?

Lesson 3-6 **Solve each equation.**

51. $3.5t = 8.75$ **52.** $\frac{b}{4} = -38$

53. $y \div 7.5 = -3.75$ **54.** $1.7x = 8.5$

EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Examples 1–3 (pages 272 and 273)

GO for Help

Solve each equation.

1. $6p = \frac{5}{8}$
2. $5x = \frac{2}{3}$
3. $2k = \frac{5}{6}$
4. $7z = \frac{3}{8}$
5. $2y = \frac{1}{3}$
6. $3b = \frac{4}{7}$
7. $7c = \frac{3}{4}$
8. $9y = \frac{5}{7}$
9. $\frac{2}{3}d = \frac{5}{8}$
10. $\frac{5}{8} = \frac{5}{8}k$
11. $\frac{5}{9} = \frac{1}{8}h$
12. $\frac{1}{7}x = \frac{4}{7}$
13. $\frac{3}{4}d = \frac{3}{8}$
14. $\frac{10}{27} = \frac{5}{9}t$
15. $\frac{2}{7}a = \frac{5}{8}$
16. $\frac{1}{9}p = \frac{5}{6}$
17. $-\frac{2}{3}t = -2$
18. $-5s = \frac{5}{7}$
19. $\frac{8}{9} = -6d$
20. $\frac{2}{3}x = -8$

Example 4 (page 273)

21. **Construction** A sheet of plywood is $\frac{3}{4}$ in. thick. Write and solve an equation to find how many sheets of plywood are in a stack 9 in. high.

Solve each equation.

22. $3 = 1\frac{1}{2}b$
23. $2\frac{1}{2}x = \frac{2}{5}$
24. $2\frac{1}{3}m = \frac{7}{12}$
25. $-1\frac{6}{7}g = -\frac{13}{15}$
26. $\frac{1}{15} = -1\frac{1}{10}t$
27. $2\frac{1}{8}k = 7$
28. $1\frac{1}{2}n = 3\frac{4}{9}$
29. $-9\frac{1}{3} = -1\frac{1}{4}t$

B Apply Your Skills

Real-World Connection

A native of China and Japan, kudzu was brought to the United States in 1876. Left alone, it grows over trees, telephone poles, and abandoned houses and cars.

Number Sense **Without solving each equation, state whether x is *positive, negative,* or *zero*. Justify your response.**

30. $17x = -\frac{11}{30}$
31. $\frac{1}{57}x = 2$
32. $\frac{4}{13}x = 0$
33. $-6\frac{1}{2}x = 0$

34. **Boat Building** Tomás calculates that he will need 86 hours to build a boat. He can work on the boat $8\frac{3}{5}$ hours per week. How many weeks will it take Tomás to build the boat?

35. **Biology** In ideal conditions, the kudzu plant can grow at least $1\frac{3}{20}$ ft per week. At this rate, how many weeks would it take a kudzu plant to grow 23 ft?

Solve each equation.

36. $-\frac{5}{7}x = \frac{9}{10}$
37. $\frac{9}{13} = -\frac{6}{11}s$
38. $-3b = \frac{2}{3}$
39. $-\frac{12}{13} = -\frac{1}{4}w$
40. $3\frac{1}{9}a = \frac{3}{7}$
41. $2\frac{3}{4} = -6\frac{3}{5}y$
42. $1\frac{1}{2}m = 1\frac{3}{4}$
43. $3\frac{3}{5}p = -4\frac{4}{9}$
44. $\frac{1}{8}d = \frac{1}{4}$
45. $\frac{1}{3}y = 2$
46. $\frac{3}{7}x = 1$
47. $\frac{7}{8}z = 3\frac{1}{2}$

48. **Astronomy** The Chandra satellite telescope views X-rays in space. It orbits as much as 87,000 miles above Earth. This is about $\frac{1}{3}$ of the distance to the moon. About how far away is the moon?

49. **Error Analysis** A student solved the equation $-\frac{7}{10}h = 5\frac{3}{5}$ and found the solution 8. Describe and correct the student's error.

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50. **Writing in Math** Describe how you would solve and check the equation $\frac{2}{3}x = 3$.

51. **Aviation** A small airplane coming in for a landing descends $\frac{5}{66}$ mi/min. About how long does it take to descend 4,000 ft? (*Hint:* 1 mi = 5,280 ft)

Challenge **Solve each equation.**

52. $-\frac{3}{4}x + \frac{1}{4}x = -6$ **53.** $\frac{5}{8}x - 6\frac{3}{8}x = 1\frac{1}{2}$ **54.** $\frac{-5}{-7}x + \left(-\frac{1}{5}x\right) = -\frac{3}{5}$

55. **Reasoning** By what would you multiply each side of the equation $ax = 27$ to solve for x? By what would you multiply each side of the equation $\frac{1}{a}x = 27$ to solve for x?

56. **Marine Biology** A sailfish can swim about $11\frac{1}{3}$ mi in 10 min. About how many miles can a sailfish swim per minute? At that speed, about how many feet does a sailfish swim in one second?

Test Prep

Multiple Choice

57. Which equation has a solution greater than 1?

A. $-5x = \frac{5}{8}$ **B.** $-\frac{5}{8}x = 5$ **C.** $\frac{5}{8}x = 5$ **D.** $5x = \frac{5}{8}$

58. What is the value of h in the equation $2\frac{1}{2} + h = -1\frac{3}{8}$?

F. $-3\frac{7}{8}$ **G.** $-1\frac{1}{8}$ **H.** $1\frac{1}{8}$ **J.** $3\frac{7}{8}$

59. The Jones family uses an average of 1 quart of milk each day. At this rate how many days will it take the family to use $5\frac{1}{2}$ gallons of milk?

A. $19\frac{1}{2}$ **B.** 20 **C.** $21\frac{1}{2}$ **D.** 22

60. A single copy of a book is $2\frac{3}{4}$ in. thick. A shipping box will hold a stack of books up to $16\frac{1}{2}$ in. tall. How many copies of the book can you stack in the box?

F. 6 **G.** 8 **H.** 32 **J.** 45

Short Response Read the passage below before doing Exercises 61 and 62.

Paper Recycling on the Rise During the 1990s, recycling in the United States steadily increased. In 1996, people in the United States recycled about nine twentieths of their paper waste. This amounted to 42.3 million tons of paper, or about 295 lb/person. Only one year earlier, Americans recycled just over two fifths of their paper waste, a total of about 32.7 million tons of paper.

61. How much paper waste did Americans produce in 1995?

62. How much paper waste did Americans produce in 1996?

Mixed Review

GO for Help

Lesson 5-7 **Solve each equation.**

63. $j + \frac{3}{4} = \frac{7}{8}$ 64. $\frac{4}{5} = y - \frac{3}{5}$ 65. $6\frac{1}{2} = m + 2\frac{7}{8}$

Lesson 5-3 66. **Snacks** One bag of popcorn holds $1\frac{5}{8}$ oz. Another holds $1\frac{3}{4}$ oz.

a. Which bag holds more popcorn?

b. How much more?

c. How much popcorn can the two bags hold in all?

Lessons 4-7 and 4-8 **Simplify each expression.**

67. $3r \cdot r^4$ 68. $\frac{6x^3}{2x}$ 69. $10s^2 \cdot 10s^3$

70. $\frac{20a^5}{4a^2}$ 71. $x^3 \cdot x^{10}$ 72. $q^5 \cdot 3q$

Checkpoint Quiz 2 — Lessons 5-4 through 5-6

Multiply or divide.

1. $\frac{2}{3}(21)$ 2. $\frac{4}{5} \cdot \frac{5}{8}$ 3. $-\frac{4}{9}\left(\frac{1}{3}\right)$

4. $\frac{2}{5} \div \frac{3}{10}$ 5. $-\frac{3}{4} \div \frac{3}{8}$ 6. $8\frac{1}{2} \div \frac{1}{4}$

Complete each statement.

7. ■ t = 4,500 lb 8. $2\frac{1}{2}$ yd = ■ in.

9. 24 oz = ■ lb 10. ■ mi = 1,760 ft

Solve each equation.

11. $y + \frac{2}{5} = \frac{3}{5}$ 12. $t - \frac{3}{4} = \frac{7}{8}$ 13. $x - 4\frac{1}{2} = 6\frac{3}{4}$

14. $4t = \frac{24}{35}$ 15. $\frac{5}{7}y = \frac{1}{3}$ 16. $5\frac{1}{3} + v = -12$

17. $-\frac{8}{9}g = \frac{3}{5}$ 18. $\frac{9}{10} = \frac{1}{4}w$ 19. $1\frac{1}{2}d = \frac{5}{22}$

20. A jetliner is cruising at an altitude of 31,680 ft. What is the altitude in miles?

21. A car is travelling $\frac{11}{12}$ miles per minute. What is the speed of th car in miles per hour?

22. You spend $\frac{1}{3}$ of your money on lunch. Your friend then pays b a loan of $2.50. Later, you spend $4 on a movie ticket and $1. for a snack. You have $5.25 left. How much money did you h before lunch?

23. **Open-Ended** Describe an object you might measure using th customary system of measurement. Choose a unit of measu and estimate the measurement of the object using that unit.